

REMARKS

Claims 1-18 are all the claims pending in the application. New claims 15-18 have been added. Reconsideration and allowance of all the claims are respectfully requested in view of the following remarks.

Drawings

The Examiner objected to the drawings as including the following reference characters not mentioned in the description: 60b, 70b, 80b, 90b, 100b, 110a, and 110b. In response, Applicants have amended the specification so as to include these reference characters.

Claim Objections

The Examiner objected to claim 8 as being of improper form because it is a multiple dependent claim that depends from another multiple dependent claim. To overcome this objection, Applicants have amended claim 8 so as to depend only from claim 7.

Claim Rejections - 35 U.S.C. § 102

The Examiner rejected claims 9-11, 13, and 14, under §102(b) as being anticipated by JP 06-081030 to Saito (hereinafter Saito). Applicants respectfully traverse this rejection because Saito fails to teach or suggest all of the elements as set forth and arranged in the claims.

Claim 9 sets forth a shaft having quench hardened section, and an indentation formed between portions of the quench hardened section, wherein the quench hardened section has a surface hardness Hv of 550 or more. In contrast to that set forth in claim 9, Saito fails to mention the surface hardness of the shaft.

With respect to claim 11, Applicants respectfully traverse this rejection because Saito fails to disclose that the quench hardened section is in the form of a line parallel to an axial direction of the shaft. By way of non-limiting example, as shown in Fig. 5 of the present application, the quench hardened section 50a is formed as a line parallel to an axial direction of

the shaft. In contrast to that set forth in claim 11, Saito shows only helical quench hardened portions 2. That is, Saito's Fig. 3 is a "depth sectional view", and not a separate pattern of linear quench hardened sections 2.

For at least any of the above reasons, Saito fails to anticipate claims 9 and 11. Likewise, Saito fails to anticipate the dependent claims 10, 13, and 14.

Claim Rejections - 35 U.S.C. § 103

- The Examiner rejected claim 12 under §103(a) as being unpatentable over Saito in view of US Patent 6,220,758 to Ono et al. (hereinafter Ono). Applicants respectfully traverse this rejection because there is no motivation for combining the references as suggested by the Examiner.

The Examiner asserts that Ono teaches the equivalence of a plurality of circles, and a helical path, as oil passages. However, the Examiner's use of Ono is not correct. That is, Ono relates to a roller supporting device which is capable of rapidly removing foreign matters entered onto a sliding surface between a supporting shaft and a roller.¹ In this regard, Ono relates to an oil passage through which oil forcibly is flowed²; the passage is not designed for collecting stagnant pools of lubricant, which is Saito's environment. Accordingly, although a plurality of circles and a helix may be appropriate equivalents in the environment of Ono—wherein oil forcibly is flowed—there is no expectation that such will be the same in the very different environment of Saito wherein lubricant is stagnantly collected.

For at least the above reasons, Saito and Ono fail to render obvious Applicants' claim 12.

¹ Ono at col. 2, lines 20-29.

² Ono at col. 6, lines 28-39.

- The Examiner rejected claims 1-3, 5, and 7, under §103(a) as being unpatentable over Saito in view of US Patent 5,490,730 to Akita et al. (hereinafter Akita). Applicants respectfully traverse this rejection because Saito and Akita fail to teach or suggest all of the elements as set forth and arranged in the claims.

Claim 1 sets forth a shaft supported by a bush, a quench hardened section formed in a projecting manner on an outer surface of the shaft; and an indentation which is formed between portions of the quench hardened section, wherein the quench hardened section has a surface hardness Hv of 550 or more. In contrast to that set forth in claim 1, and as noted above, Saito fails to mention the surface hardness of the shaft. Further Akita fails to teach or suggest a surface hardness as claimed. Accordingly, for the sake of argument alone, even assuming that one of ordinary skill in the art were motivated to combine Saito and Akita as suggested by the Examiner, any such combination would still not teach or suggest a surface hardness as claimed.

With respect to claim 3, Applicants arguments as set forth above for claim 11 are pertinent here and, therefore, are incorporated by reference. Further, Akita fails to cure the above-noted deficiencies in Saito. Accordingly, for the sake of argument alone, even assuming that one of ordinary skill in the art were motivated to combine Saito and Akita as suggested by the Examiner, any such combination would still not teach or suggest a quench hardened section as claimed.

With respect to claim 7, Applicants respectfully traverse this rejection because the references fail to teach or suggest all of the elements as set forth and arranged in the claims.

Claim 7 sets forth that the bush includes sealing members provided on both sides thereof, and the quench hardened section is provided at positions on the outer surface of the shaft facing the sealing members. By way of non-limiting example, as shown in Fig. 2, one embodiment consistent with that set forth in claim 7 includes a bush 9 having sealing members 12 provided on the sides thereof, and the quench hardened section 10a is provided at portions of the surface of the shaft 10 facing the sealing members 12.

In contrast to that set forth in claim 7, Saito and Akita fail to teach or suggest any relationship between the position of the quench hardened section and any sealing members. That is, Saito discloses a shaft having a quench hardened section, but does not disclose a bush. Akita does disclose a bush having sealing members, but does not disclose a quench hardened section on the shaft that is supported by the bush. Accordingly, there is no teaching or suggestion of any relationship between the quench hardened section and sealing members of a bush. Therefore, these references fail to render obvious Applicants' claim 7.


For at least any of the above reasons, Saito and Akita fail to render obvious Applicants' claims 1, 3, and 7. Likewise, these references fail to render obvious the dependent claims 2 and 5.

Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



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